Space Weather Forecast

Issued on Friday, 08 July 2022 at 01:19 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Minor Geomagnetic Storms likely Day 1 (8thJuly), with risk decreasing through the period. Slight chance of Minor-Moderate radio blackouts.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low, with only one minor Common class flare. This was emitted from new region AR3055 in the southeast quadrant, which currently appears relatively small and magnetically simple. However, AR3053 remains the largest region on the visible disc. The remaining four sunspot regions are small, simple and relatively stable. No Earth-directed CMEs have been observed in available imagery over the past 24 hours.

Solar Wind / Geomagnetic Activity: The solar wind showed a weak CME arrival, starting around 07/0600 UTC, perhaps combined with the onset of weak coronal hole influence. Wind speed was initially ambient around 310 km/s, but saw a step-wise increase from 07/0600 UTC, peaking at 438 km/s at 07/1432 UTC, and is currently around 380 km/s. The strength of the magnetic field was initially weak, but jumped briefly to moderate levels around 07/0810 UTC, before becoming strong from 07/1045 UTC. The important north-south component of the magnetic field was weakly negative until 07/1100 UTC, then became moderate or strongly negative. Geomagnetic activity was Quiet at first, increasing Unsettled to Active from 07/1200 UTC, with a Minor Storm interval 07/1200-1500UTC.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is likely to remain Low, with a Slight Chance of isolated Moderate class flares. An increase is possible from day 3 (10th) as returning regions potentially rotate onto the eastern limb.

Solar Wind / Geomagnetic Activity: Earth may experience a glancing blow today from a CME, which occurred on 05 July. This CME was difficult to assess, and as such confidence is low. Otherwise it appears that Earth has recently experienced a weak CME arrival, combined with the onset of weak coronal hole influence. The solar wind is expected to be at background to slightly elevated levels, with a chance of temporarily reaching elevated levels today if the CME arrives. Geomagnetic activity is expected to be Unsettled to Active with Minor Storm intervals likely today (8th July). Activity should decline tomorrow (9th) to become mainly Quiet from Day 3 (10 July).

Energetic Particles / Solar Radiation: No solar radiation storms are likely, although probabilities increase very slightly as the largest sunspot region moves towards centre disc.

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	60	20	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	20	20	20	20
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	2	2
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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